CLAIMS

I CLAIM:

1. A method for non-destructive evaluation of a sample, comprising the steps of:

obtaining a defect image and a live image of the sample, the defect image and the live image having a one-to-one correspondence with each other; and

superimposing one of the defect image and the live image on the other of the defect image and the live image.

2. The method of claim 1, further comprising the steps of:

locating a defect in the sample via the defect image;

referencing the defect image according to the located defect; and

referencing the sample based on the referenced defect image while viewing the live image and the referenced defect image on a display.

3. The method of claim 2, wherein the step of referencing the defect image includes the step of marking the sample according to the referenced defect image.

4. The method of claim 2, wherein the step of referencing the defect image includes the step of measuring a characteristic of the sample at a selected location.

5. A method for non-destructive evaluation of a sample, comprising the steps of:

obtaining a defect image and a live image of the sample, the defect image and the live image having a one-to-one correspondence with each other;

displaying the defect image on a digital display;

superimposing the defect image onto the live image on the display; and

referencing the sample while viewing the live image and the defect image on the display.

6. The method of claim 5, wherein the defect image is an infrared image, and wherein the defect image and the live image are obtained from an infrared camera.

7. The method of claim 6, further comprising the steps of:

changing the temperature of the sample; and

obtaining at least one defect image over time to locate a defect in the sample.

8. The method of claim 7, wherein the changing step includes directing a heating pulse onto the sample such that the heat is distributed evenly over the sample.

9. The method of claim 7, wherein the changing step includes directing continuous heat onto the sample such that the heat is distributed evenly over the sample.

10. The method of claim 5, wherein the referencing step includes the steps of:

measuring a characteristic of the sample at a selected location; and

annotating the defect image with data obtained from the measuring step.

11. The method of claim 6, wherein the referencing step includes the steps of:

measuring a characteristic of the sample at a selected location; and

annotating the defect image with data obtained from the measuring step.

12. The method of claim 5, wherein the obtaining, displaying, superimposing and referencing steps are automated and conducted in a computer.

13. An apparatus for non-destructive testing/evaluation of a sample, comprising:

a camera that generates a defect image and a live image of the sample;

a processor coupled with the camera to digitize the defect image and the live image;

a display for displaying the digitized defect image and the live image, wherein the processor and the display include means for referencing the defect image and

sub. 15 cont'd. superimposing one of the defect image and the live image onto the other of the defect image and the live image.

14. The apparatus of claim 13, wherein the processor and the display are constructed as part of the camera.

15. The apparatus of claim 13, wherein the camera is an infrared camera, and wherein the apparatus further comprises:

a hood having a reflective interior and an opening for the camera at a back portion and an open end at the front portion, wherein the sample is disposed in the front portion of the hood; and

at least one heating lamp disposed inside the hood to heat the sample.

16. The apparatus of claim 15, wherein the hood has a door to allow physical access to the sample by the user.

sub. 16

17. A computer readable storage device used to control non-destructive testing and evaluation of materials, comprising the steps of:

obtaining a defect image and a live image of the sample, the defect image and the live image having a one-to-one correspondence with each other; and

superimposing one of the defect image and the live image on the other of the defect image and the live image.

18. The computer readable storage device of claim 17, further comprising the steps of:

locating a defect in the sample via the defect image;

referencing the defect image according to the located defects; and

referencing the sample after the superimposing step while viewing the live image and the referenced defect image on a display.

19. The computer readable storage device of claim 18, wherein the step of referencing the defect image includes the step of marking the sample according to the referenced defect image.

20. The computer readable storage device of claim 18, wherein the step of referencing the defect image includes the step of measuring a characteristic of the sample at a selected location.

21. A computer readable storage device for non-destructive evaluation of a sample, comprising the steps of:

obtaining a defect image and a live image of the sample, the defect image and the live image having a one-to-one correspondence with each other;

displaying the defect image on a digital display;

superimposing the defect image onto the live image on the display; and

referencing the sample while viewing the live image and the defect image on the display.

22. The computer readable storage device of claim 21, wherein the defect image is an infrared image, and wherein the defect image and the live image are obtained from an infrared camera.

23. The computer readable storage device of claim 22, further comprising the steps of:

changing the temperature of the sample; and

obtaining at least one defect image over time to locate a defect in the sample.

24. The computer readable storage device of claim 23, wherein the changing step includes directing a heating pulse onto the sample such that the heat is distributed evenly over the sample.

25. The computer readable storage device of claim 23, wherein the changing step includes directing continuous heat onto the sample such that the heat is distributed evenly over the sample.

26. The computer readable storage device of claim 21, wherein the referencing step includes the steps of:

measuring a characteristic of the sample at a selected location; and

annotating the defect image with data obtained from the measuring step.

27. The computer readable storage device of claim 22, wherein the referencing step includes the steps of:

measuring a characteristic of the sample at a selected location; and

annotating the defect image with data obtained from the measuring step.

28. The computer readable storage device of claim 21, wherein the obtaining, displaying, superimposing and referencing steps are automated and conducted in a computer.